AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF THE CLAIMS

1. **(CURRENTLY AMENDED)** A sensor for detecting hydrogen peroxide, comprising an element exhibiting piezoelectric properties having a metal-oxide-containing coating, said metal-oxide having a divalent or tetravalent state and exhibiting a catalytic reaction with hydrogen peroxide.

2. **(ORIGINAL)** A sensor as defined in claim 1, wherein said metal-oxide is selected from the group consisting of lead dioxide (PbO_2), silver oxide (AgO) and manganese dioxide (MnO_2).

3. **(ORIGINAL)** A sensor as defined in claim 2, wherein said metal oxide is lead dioxide (PbO_2).

4. **(ORIGINAL)** A sensor as defined in claim 3, wherein said element is a crystal that lacks a center of symmetry.

5. **(ORIGINAL)** A sensor as defined in claim 4, wherein said crystal is a quartz crystal.

6. **(ORIGINAL)** A sensor as defined in claim 5 having a resonant frequency of 5 MHz or 10 MHz.

7. **(CURRENTLY AMENDED)** A sensor for detecting hydrogen peroxide, comprising a piezoelectric crystal ~~having~~ that supports a lead dioxide (PbO_2)~~-containing~~ coating that exhibits a catalytic reaction with hydrogen peroxide.

8. **(ORIGINAL)** A sensor as defined in claim 7, wherein said crystal is a quartz crystal.

9. **(ORIGINAL)** A sensor as defined in claim 8, having a resonant frequency of 5 MHz or 10 MHz.

10. **(CANCELED)**

11. **(CURRENTLY AMENDED)** A sensor for detecting hydrogen peroxide, comprising:

a substrate exhibiting piezoelectric properties having first and second major surfaces;

a first electrode connected to said first major surface and a second electrode connected to said second major surface; and

a layer of a ~~material~~ metal oxide in a divalent or tetravalent state supported by [[~~on~~]] at least one of said first and second major surfaces, said ~~material~~ metal-oxide layer having a catalytic reaction with hydrogen peroxide ~~operable~~ to produce a change in a frequency of said sensor ~~when exposed to hydrogen peroxide~~.

12. **(ORIGINAL)** A sensor as defined in claim 11 for sensing vaporized hydrogen peroxide.

13. **(CURRENTLY AMENDED)** A sensor as defined in claim 11, wherein said substrate is ~~selected from the group consisting~~ of one of a quartz crystal, Rochelle salt, barium titanate, tourmaline, polyvinylidene fluoride and crystals that lack a center of symmetry.

14. **(ORIGINAL)** A sensor as defined in claim 13, wherein said substrate is a quartz crystal.

15. **(CANCELED)**

16. **(ORIGINAL)** A sensor as defined in claim 15, wherein said metal oxide is lead dioxide (PbO_2).

17. **(ORIGINAL)** A method of determining the presence of a sterilant in a region of a decontamination system having a chamber defining the region and a circulation system for supplying the sterilant to the region, comprising the steps of:

providing in said region an element having piezoelectric properties with a metal oxide coating having a divalent or tetravalent state;

determining a baseline frequency of oscillation for said element in the absence of the sterilant;

determining a sensed frequency of oscillation for said element when exposed to the sterilant in said region; and

determining the concentration of the sterilant in said region based upon the difference between said sensed frequency and said baseline frequency.

18. **(ORIGINAL)** A method as defined in claim 17, wherein said sterilant includes hydrogen peroxide.

19. **(ORIGINAL)** A method as defined in claim 18, wherein said hydrogen peroxide is vaporized.

20. **(ORIGINAL)** A method as defined in claim 19, wherein said sterilant includes water vapor.

21. **(ORIGINAL)** A method as defined in claim 18, wherein said metal oxide is lead oxide.

22. **(ORIGINAL)** A method as defined in claim 19, wherein said element is a quartz crystal.

23. **(CURRENTLY AMENDED)** A system for the deactivation of bio-contamination, comprising:

a system for moving a sterilant through a space;

a piezoelectric device that supports a ~~material~~ metal oxide in a divalent or tetravalent state that interacts with said sterilant, said piezoelectric device having a frequency that changes in response to the presence of said sterilant; and

a controller having data stored therein relating to said piezoelectric device, said data relating a frequency of said piezoelectric device to a concentration of said sterilant.

24. **(ORIGINAL)** A system as defined in claim 23, wherein said sterilant includes hydrogen peroxide.

25. **(ORIGINAL)** A system as defined in claim 24, wherein said hydrogen peroxide is vaporized.

26. **(ORIGINAL)** A system as defined in claim 25, wherein said sterilant includes water vapor.

27. **(ORIGINAL)** A system as defined in claim 23, wherein said piezoelectric device is a crystal that lacks a center of symmetry.

28. **(ORIGINAL)** A system as defined in claim 27, wherein said crystal is a quartz crystal.

29. **(ORIGINAL)** A system as defined in claim 28 having a resonant frequency of 5 MHz or 10 MHz.

30. **(CANCELED)**

31. **(CURRENTLY AMENDED)** A system as defined in claim [[~~30~~]]23, wherein said metal oxide is lead dioxide (PbO_2).